

WHAT IS CLAIMED IS:

1. An apparatus for maintaining an optical gap between a pellicle and a reticle in a photolithography system comprising:
  - a frame defining first and second opposing surfaces;
  - a reticle mated to said first opposing surface using magnetic coupling;and
  - a pellicle mated to said second opposing surface using magnetic coupling.
2. The apparatus of claim 1, wherein said first opposing surface includes a high magnetic permeability coating.
3. The apparatus of claim 1, wherein said second opposing surface includes a high magnetic permeability coating.
4. The apparatus of claim 3, wherein said high magnetic permeability coating includes any one of soft iron, nickel-iron, and a nickel-iron alloy.
5. The apparatus of claim 3, wherein said high magnetic permeability coating carries a magnetic flux of at least 1,000 gauss and maintains a permeability of at least 100 at 1,000 gauss.
6. The apparatus of claim 4, wherein said reticle includes a high Hc coating outside a pattern area for coupling to said high magnetic permeability coating of said first opposing surface of said frame.
7. The apparatus of claim 1, wherein said pellicle includes a high Hc coating outside a pattern area for coupling to said high magnetic permeability coating of said first opposing surface of said frame.

8. The apparatus of claim 1, wherein said high Hc coating includes any one of a ceramic ferrite, barium ferrite, a cobalt alloy, a nickel alloy, a vanadium alloy, a samarium cobalt alloy, samarium cobalt, an aluminum-nickel alloy, a nickel-iron alloy, a neodymium-iron-boron alloys and a vanadium-cobalt alloy.

9. The apparatus of claim 8, wherein said high Hc coating includes a high spatial frequency pattern of alternating field directions.

10. The apparatus of claim 8, wherein said high Hc has a value of at least 1,000 oersteds.

11. The apparatus of claim 8, wherein said Hc has a value of at least 5,000 oersteds.

12. The apparatus of claim 1, wherein said first opposing surface includes a high Hc coating.

13. The apparatus of claim 12, wherein said reticle includes a high magnetic permeability coating outside a pattern area for coupling to said high Hc coating of said first opposing surface of said frame.

14. The apparatus of claim 12, wherein said high Hc coating is patterned into strips.

15. The apparatus of claim 1, wherein said second opposing surface includes a high Hc coating.

16. The apparatus of claim 15, wherein said pellicle includes a high magnetic permeability coating outside a pattern area for coupling to said high Hc coating of said first opposing surface of said frame.

17. The apparatus of claim 1, wherein said frame includes a permanent embedded magnet.

18. An apparatus for maintaining an optical gap between a pellicle and a reticle in a photolithography system comprising:

a frame;

a reticle mated to a first side of said using magnetic coupling; and

a pellicle mated to a second side of said frame using magnetic coupling.

19. The apparatus of claim 18, wherein said first side includes a high magnetic permeability coating.

20. The apparatus of claim 18, wherein said second side includes a high magnetic permeability coating.

21. The apparatus of claim 20, wherein said high magnetic permeability coating includes any one of soft iron, nickel-iron, and a nickel-iron alloy.

22. The apparatus of claim 20, wherein said high magnetic permeability coating carries a magnetic flux of at least 1,000 gauss and maintains a permeability of at least 100 at 1,000 gauss.

23. The apparatus of claim 22, wherein said reticle includes a high H<sub>c</sub> coating outside a pattern area for coupling to said high magnetic permeability coating of said first side of said frame.

24. The apparatus of claim 18, wherein said pellicle includes a high H<sub>c</sub> coating outside a pattern area for coupling to said high magnetic permeability coating of said first side of said frame.

25. The apparatus of claim 18, wherein said high Hc coating includes any one of a ceramic ferrite, barium ferrite, a cobalt alloy, a nickel alloy, a vanadium alloy, a samarium cobalt alloy, samarium cobalt, an aluminum-nickel alloy, a nickel-iron alloy, a neodymium-iron-boron alloys and a vanadium-cobalt alloy.

26. The apparatus of claim 25, wherein said high Hc coating includes a high spatial frequency pattern of alternating field directions.

27. The apparatus of claim 25, wherein said high Hc has a value of at least 1,000 oersteds.

28. The apparatus of claim 25, wherein said Hc has a value of at least 5,000 oersteds.

29. The apparatus of claim 18, wherein said first side includes a high Hc coating.

30. The apparatus of claim 29, wherein said reticle includes a high magnetic permeability coating outside a pattern area for coupling to said high Hc coating of said first side of said frame.

31. The apparatus of claim 29, wherein said high Hc coating is patterned into strips.

32. The apparatus of claim 18, wherein said second side includes a high Hc coating.

33. The apparatus of claim 32, wherein said pellicle includes a high magnetic permeability coating outside a pattern area for coupling to said high Hc coating of said first side of said frame.

34. The apparatus of claim 18, wherein said frame includes a permanent embedded magnet.